

**ABSTRACT OF THE DISCLOSURE**

A method of determining characteristic spin parameters of a spun optical fiber by performing optical time-domain reflectometry measurements on the fiber, so as to obtain a state of polarization spatial function from a backscattered electromagnetic field, the state of polarization spatial function being defined by a plurality of components; and processing the state of polarization spatial function. The process includes calculating a further spatial function related to the spatial first derivative of at least one of the components of the state of polarization spatial function; identifying a spatial periodicity of the further spatial function; and determining the characteristic spin parameters as a function of the spatial periodicity.